

CLAIMS

1. A toggle bolt device comprising;

a) an elongated body having first and second end portions and a central, longitudinal bore that is at least partially threaded, the first end portion of the body having a socket and a plurality of circumferentially spaced apart slots that communicate with the socket;

b) a shaft that extends through the bore and having respective first and second end portions communicating with the body end portions, the shaft being at least partially externally threaded and rotatable relative to the body;

c) a plurality of locking members that are attached to the shaft at the first end portion of the body, the locking members being attached to the first end portion of the shaft;

d) the locking members being movable between extended and retracted positions responsive to a rotation of the shaft, the locking members extending radially beyond the outer surface of the body in the extended position and being contained within the body at the socket in the retracted position; and

e) a nut that is connectable to the body at the partially threaded portion.

2. The toggle bolt of claim 1 wherein there are at least three locking members.

3. The toggle bolt of claim 1 wherein the locking members have curved outer surfaces.

4. The toggle bolt of claim 1 wherein the body has curved camming surfaces at the socket that are positioned to guide movement of the locking members as they travel between the extended and retracted positions.

1 5. The toggle bolt of claim 1, further comprising a plate
2 attached to the shaft, the locking members being mounted on the
3 plate.

1 6. The toggle bolt of claim 5 wherein the shaft has a first
2 threaded portion that connects with the plate and a second
3 threaded portion that engages the body.

1 7. The toggle bolt of claim 1 wherein the shaft has a tool
2 receptive portion at one end thereof that enables rotation of the
3 shaft relative to the body.

1 8. The toggle bolt of claim 1 wherein the nut engages the body
2 generally opposite the locking members.

1 9. The toggle bolt of claim 1 wherein the shaft moves linearly
2 relative to the central longitudinal axis of the body when the
3 shaft is rotated.

1 10. A fastener for joining two members together, each member
2 having an opening therethrough of a selected diameter,
3 comprising;

4 a) an elongated body having first and second end portions
5 and a central, longitudinal bore that is partially threaded, the
6 first end portion of the body having a socket and a plurality of
7 circumferentially spaced apart, radially extending slots that
8 communicate with the socket;

9 b) a shaft that extends through the bore and having
10 respective first and second end portions communicating with the
11 body end portions, the shaft being partially externally threaded
12 and rotatable relative to the body, the partially externally
13 threaded portion of the shaft engaging the threaded portion of
14 the bore;

15 c) a plurality of locking members that are attached to the
16 shaft at the first end portion of the body, the locking members
17 being attached to a plate mounted to the first end portion of the
18 shaft;

19 d) the locking members being movable between extended and
20 retracted positions responsive to a rotation of the shaft, the
21 locking members extending radially beyond the outer surface of
22 the body and the selected diameter in the extended position and
23 being contained within the body at the socket and inside the
24 selected diameter in the retracted position;

25 e) a nut that is connectable to the body at the partially
26 threaded portion.

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